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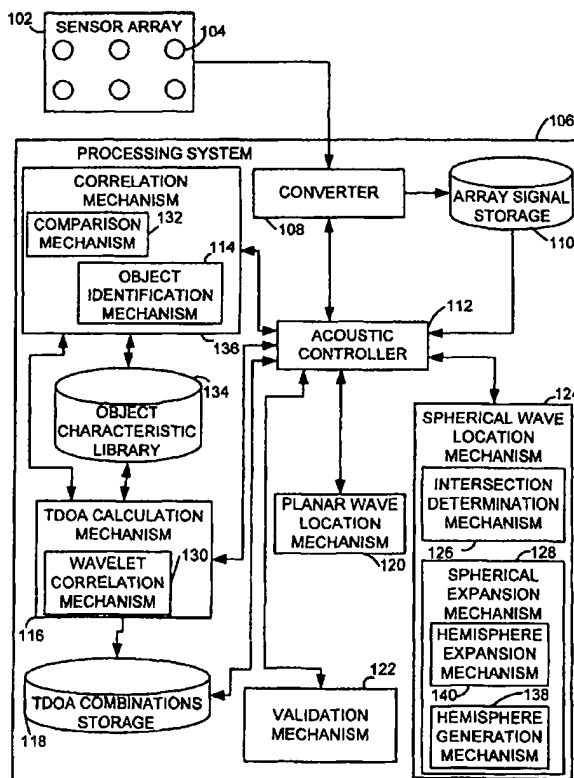
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(54) Title: IDENTIFICATION AND LOCATION OF AN OBJECT VIA PASSIVE ACOUSTIC DETECTION



(57) **Abstract:** An object producing an acoustic wave is located and identified by passive detection of the acoustic wave. The acoustic wave is detected by different sensors (104) in an array (102) having a plurality of passive acoustic detectors (104). The sensors (104) produce signals in response to detection of the acoustic wave. A wavelet derived from an acoustic wave of a known form with which each of the at least three signals correlates is determined. Time difference of arrival (TDOA) measurements between the at least three signals using correlation intensity with the wavelet is used to perform acoustic reciprocity from each of the different detectors. The result of the acoustic reciprocity is a hemisphere centered around each of the different sensors (104). The hemispheres produced by the acoustic reciprocity are examined to determine an intersection point of at least three hemispheres. The size of the hemispheres is increased according to the velocity of the acoustic wave and pre-determined intervals until an intersection point is found. The intersection point represents the location of the object.

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